

NAME: _____

PERIOD: _____

Reading Outline 1.3 Measurement

(pages 16–19)

This section discusses units of measurement and making and evaluating measurements.

Reading Strategy (described briefly on page 14)

Previewing Before you read the section, rewrite the green and blue topic headings in this section as questions in the table below. As you read, write answers to the questions. For more information on this Reading Strategy, see the **Reading and Study Skills** in the **Skills and Reference Handbook** at the end of your textbook.

Measurement
What are SI units of Measurements?
What are base units and derived units?
What do metric prefixes tell you?
What causes limits of measurements?
What is precision?
What is accuracy?

SI Units of Measurement (pages 16–18)

1. Circle the letters of elements that are required for a measurement to make sense.

- | | |
|------------------------|------------|
| a. scientific notation | b. numbers |
| c. exponents | d. units |

2. Is the following sentence true or false? Explain why.

“Units in the SI system include feet, pounds, and degrees Fahrenheit.”

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Match the SI base unit with the quantity that is used to measure.

SI Base Unit	Quantity
___ 3. meter	a. Mass
___ 4. kilogram	b. Time
___ 5. kelvin	c. Length
___ 6. second	d. Temperature

SI Prefixes

Prefix	Symbol	Meaning	Multiply Unit By
giga-	G		1,000,000,000
mega-	M	million (10^6)	
kilo-	k	thousand (10^3)	
	m, L, g	base unit	1
deci-	d		0.1
centi-		hundredth (10^{-2})	0.01
	m	thousandth (10^{-3})	0.001
	μ	millionth (10^{-6})	0.000001
nano-		billionth (10^{-9})	0.000000001

7. Complete the table of SI prefixes by filling in the missing information.

8. A ratio of equivalent measurements that is used to convert a quantity expressed in one unit to another unit is called a(n) _____.

Limits of Measurement (page 19)

9. Circle the letter of each expression that has four significant figures.

- a. 1.25×10^4 b. 12.51
c. 0.0125 d. 0.1255

10. Is the following sentence true or false? Explain why.

“The precision of a calculated answer is limited by the least precise measurement used in the calculation.”

11. Calculate the density if the mass of a solid material is measured as 15.00 grams and its volume is measured as 5.0 cm^3 ? Round off your answer to the proper number of significant figures.

12. Describe the difference between precision and accuracy.